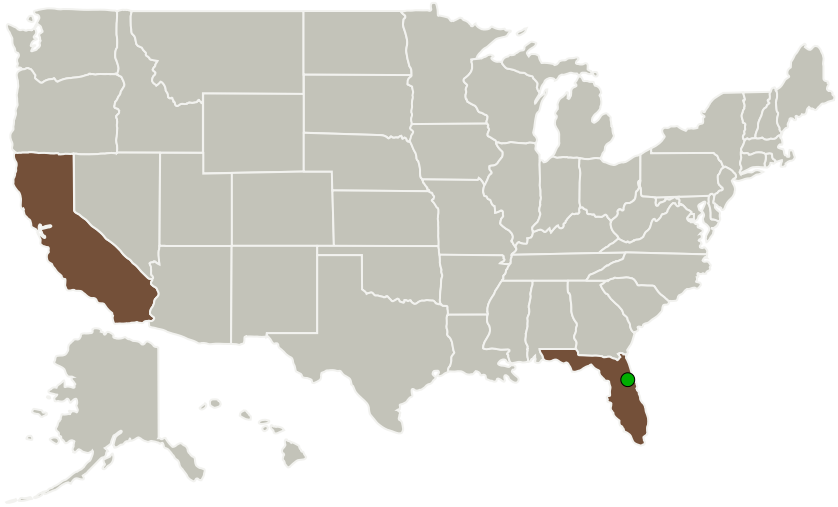
Fast Growing High-Yield Wheat and Canola for Efficient Nutrient Recycling Systems, Phase I

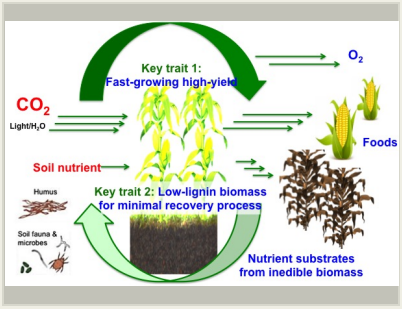
Completed Technology Project (2017 - 2018)

Project Introduction

Among a suite of synthetic biology methods, Afingen's APFL technology offers a robust path to produce high-value biochemicals from inedible biomass-derived substrates with minimal cis-genetic manipulation and improved genetic stability compared to conventional bio-engineering. By amplifying and/or reducing target compounds with unprecedented specificity and improved tolerance, engineered food-, feed-, and biofuel crops (e.g. switchgrass, wheat, canola, corn, soybeans, alfalfa, tomato, potato) may offer higher yields of biomass and enhance degradation in the inedible biomass to facilitate nutrient recycling. This STTR Phase I application by Afingen, Inc. and Lawrence Berkeley National Laboratory is aimed at generating significantly improved rotation crops, wheat and canola,with a combination of three beneficial traits: [1] accelerated rooting growth, [2] increased grain yield and vegetative biomass, and [3] enhanced degradability of inedible biomass.

Primary U.S. Work Locations and Key Partners





Fast growing high-yield wheat and canola for efficient nutrient recycling systems, Phase I Briefing Chart Image

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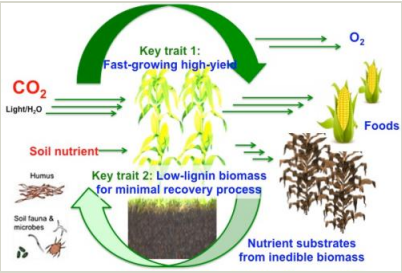
Organizations Performing Work	Role	Type	Location
AFINGEN, Inc.	Lead Organization	Industry	Emeryville, California
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida
Lawrence Berkeley National Laboratory(LBNL)	Supporting Organization	R&D Center	Berkeley, California

Primary U.S. Work Locations	
California	Florida

Images



Briefing Chart Image
Fast growing high-yield wheat and canola for efficient nutrient recycling systems, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/131262)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
AFINGEN, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

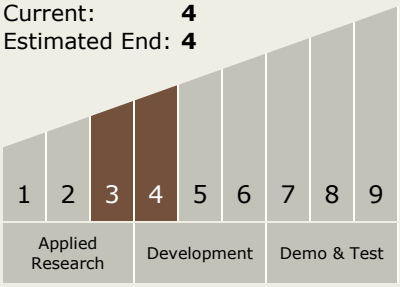
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Ai Oikawa

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System